

**DETAILED ACTION**

***Response to Amendment***

1. The amendment filed on 7/17/2009 has been entered. No claims have been added amended or cancelled. Accordingly, claims 1, 3-12, 31-32, 37-58 are pending in this office action.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-10, 31-32, 37-45, 48-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002 0029211 (hereinafter Bonner) in view of US 5551027 (hereinafter Choy).

As for claim 1 Bonner discloses: receiving a fetch request to fetch data from a base table that satisfies a query predicate (See paragraphs 0006, 0015), wherein rows of the base table are stored in table partitions and wherein there is one index partition for each determined table partition (See paragraph 0041);, comparing a direction indicated in the fetch request and an ordering of the index partitions; setting a fetch direction based on a result of the comparison of the direction indicated in the fetch request and the ordering of the index partitions (See paragraph 0089); scanning the index partitions in the fetch direction to determine a set of nodes from the index partitions whose key column value satisfies the query predicate (See paragraph 0041); ordering the set of determined nodes from the index partitions; selecting one node from the ordered set based on a position of the node in the ordering; and returning data from the table row identified by the location identifier in the selected node in response to the fetch request (See paragraph , 0089-0090).

Bonner does not disclose wherein each index partition includes nodes, wherein each node in each index partition includes at least one key column value from a corresponding table row in the table partition associated with the index partition and a location identifier identifying the corresponding table row in the corresponding table partition. Choy does disclose wherein each index partition includes nodes, wherein each node in each index partition includes at least one key column value from a corresponding table row in the table partition associated with the index partition and a location identifier identifying the corresponding table row in the corresponding table partition (See column 7 lines 19-29 and column 7 lines 38-40). It would have been

obvious to an artisan of ordinary skill in the pertinent art at the time the invention was made to have incorporated the teaching of Choy into the system of Bonner. The modification would have been obvious because the two references are concerned with the solution to the problem of data processing; therefore, there is an implicit motivation to combine these references. In other words, the ordinary skilled artisan, during his/her quest for a solution to the cited problem, would look to the cited references at the time the invention was made. Consequently, the ordinary skilled artisan would have been motivated to combine the cited references since Choy's teaching would enable users of the Bonner system to have efficient and dynamic indexing (See Choy column 6 lines 29-35).

As for claim 3, the rejection of claim 1 is incorporated, and further Bonner discloses: wherein the fetch direction is set opposite the direction indicated in the fetch request; the direction indicated in the fetch request is opposite the ordering of the index partitions (See paragraph 0090).

As for claim 4, the rejection of claim 1 is incorporated, and further Bonner discloses: setting the fetch direction to backward if the fetch direction is backward and the fetch direction is not opposite the ordering of the index partitions or if the fetch direction is forward and the fetch direction is opposite the ordering of the index partitions, and setting the fetch direction to forward if the fetch direction is backward and the fetch direction is opposite the ordering of the index partitions or if the fetch

direction is forward and the fetch direction is not opposite the ordering of the index partitions (See paragraph 0090).

As for claim 5 the rejection of claim 1 is incorporated, and further Bonner discloses: if the fetch request is a first fetch of the fetch request, then selecting one node starting from one of: a lowest key value from each index partition if the fetch direction is forward or highest key value from each index partition if the fetch direction is backward (See paragraph 0100).

As for claim 6 the rejection of claim 1 is incorporated, and further Bonner discloses: if the fetch request is not a first fetch of the fetch request, then determining whether the fetch direction in which the index partitions are scanned for a previous fetch request is a same direction as the direction indicated in a current fetch request, wherein the direction indicated in the fetch request is capable of having been modified (See paragraph 0079); and if the fetch direction for the previous fetch request and direction indicated in the current fetch request are different, then discarding all saved nodes for the index partitions and selecting one node from a last selected node (See paragraph 0090 note save point).

As for claim 7 the rejection of claim 6 is incorporated, and further Bonner discloses: if the previous and current directions are the same, then scanning in the

direction of the fetch request from the previously saved node in each index partition (See paragraph 0100).

As for claim 8 the rejection of claim 1 is incorporated, and further Bonner discloses: receiving a subsequent fetch request to fetch data from the base table (See paragraph 0079), replacing a previously selected node selected in a previous fetch request in the set with one node in the index partition including the previously selected node whose key column value satisfies the query predicate to form a modified set; selecting one node from the modified set; and returning the table row identified by the location identifier in the node selected from the modified set (See paragraph 0095).

As for claim 9 the rejection of claim 8 is incorporated, and further Bonner discloses: wherein the subsequent fetch request comprises a fetch relative request to fetch a row that is multiple number of rows from the previously selected node (See paragraph 0041), further comprising: performing the steps of replacing the previously selected node and selecting one node multiple number of times to determine the selected node to return to the fetch relative request to satisfy a fetch quantity (See paragraph 0060).

As for claim 10 the rejection of claim 8 is incorporated, and further Bonner discloses: wherein the subsequent fetch request comprises a fetch absolute request to fetch a row that is multiple number of rows from one end of the table (See paragraph

0090), further comprising: determining a new set of nodes, one from each index partition, by scanning from one end of the index partitions for a first node whose key column value satisfies the query predicate and whose key column value is greater than the previously selected node if fetching forward and the key is less than the previously selected node if fetching backward', performing the steps of replacing the previously selected node and selecting one node a number of times that is one less than the number of rows indicated in the fetch absolute request to determine the selected node to return to the fetch relative request; and performing the steps of replacing the previously selected node and selecting one node the multiple number of times to determine the selected node to return to the fetch relative request (See paragraph 0090).

As for claim 31 the rejection of claim 1 is incorporated and further Bonner discloses: determining whether the key value of the selected node from the ordered set satisfies the query predicate; and selecting a next node from the ordered set following the selected node that does not satisfy the query predicate (See paragraph 0092).

As for claim 32 the rejection of claim 1 is incorporated and further Bonner discloses: wherein determining the set of nodes from the index partitions comprises executing parallel tasks to process the index partitions (See paragraph 0114).

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Claims 37-45 are system claims corresponding to the method of claims 1, 3-10, 31-32 and are thus rejected for the same reasons as set forth in the rejection of claims 1, 3-10, 31-32.

Claims 48-56 are article of manufacturing claims corresponding to the method of claims 1, 3-10, 31-32 and are thus rejected for the same reasons as set forth in the rejection of claims 1, 3-10, 31-32.

***Response to Arguments***

Applicant's arguments filed 7/17/09 have been fully considered but they are not persuasive.

**Applicant argues:**

The Examiner cited para. 89 of Bonner as teaching the claim requirement of comparing a direction indicated in the fetch request and an ordering of the index partitions. (OA5, pgs. 3-4, 8) Applicants traverse. The cited para. 89 mentions logic implemented in the database program 4 to return data to an application program 2 in response to a FETCH command, such as the FETCH command shown in FIG. 8. If (at block 252) the FETCH is "insensitive", then the database program 6 would position (at block 254) the cursor to the position specified in the FETCH operation, e.g., PRIOR, FIRST, LAST, CURRENT, etc. and then return (at block 256) the row at the new cursor position in the result table 50. If the returned row in the result table 50 was previously fetched with a FETCH SENSITIVE, it would reflect any changes made to the base table 60 prior to such FETCH SENSITIVE operation. The FETCH sensitivity that can be specified depends on the declared cursor sensitivity. If the cursor is declared as insensitive, then the FETCH can only be insensitive. However, if the cursor is declared as sensitive, then the FETCH can be declared as either sensitive or insensitive. Although the cited Bonner discusses the operations of a fetch sensitive in which fetched data reflects changes to the base table prior to the fetch sensitive operation, the Examiner has not shown where para. 89 teaches the claim requirement of comparing a direction indicated in the fetch request and an ordering of index partitions. The cited



para. 89 discusses declaring a cursor as "insensitive" or "sensitive" which indicates whether the fetched data from the result table should reflect changes to the base table since the fetch operations. The Examiner has not shown where para. 89 teaches that the direction indicated in the fetch request, e.g., forward or backward, is compared to an ordering of index partitions.

**Examiner responds:**

Examiner is not persuaded. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. Interpretation of Claims- Broadest Reasonable Interpretation: During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969). In this case this fetch request "indicates" a direction. An indication is something that is a sign or points to the direction but it does not necessary specify the direction the fetch insensitive command has to compare positions in the indexes with respect to the cursor because the cursor has to be moved unless it is already at the location (prior first , last current).

**Applicant argues:**

Claims 3, 38, and 49 depends from claim 1, 37, and 48, respectively, and further require that the fetch direction is set opposite the direction indicated in the fetch request if the direction indicated in the fetch request is opposite the ordering of the index partitions. The Examiner cited para. 90 of Bonner as teaching the additional requirements of these claims. (OA5, pg. 5). Applicants traverse. The cited para. 90 mentions that if the FETCH is SENSITIVE, then the data manager 16 repositions (at block 258) the cursor (current row pointer) to the row in the result table 50 according to the operation specified in the FETCH statement, e.g., next, prior, first, k rows forward or backward in a relative or absolute operation, etc. The remaining para. 90 then discusses how to process a fetch sensitive when flags for the accessed row of the result table may indicate that the accessed row has been deleted from the base table.

**Examiner responds:**

Examiner is not persuaded. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. Interpretation of Claims- Broadest Reasonable Interpretation: During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969). In this case examiner has also cited paragraph 0089 "that the fetch direction is

set opposite the direction indicated in the fetch request if the direction indicated in the fetch request is opposite the ordering of the index partitions." Is discloses by the relative or backward functionality of the Bonner system (the cursor must be repositions).

**Applicant argues:**

Claims 4, 39, and 50 depend from claims 1, 37, and 48, respectively, and further require that setting the fetch direction comprises: setting the fetch direction to backward if the fetch direction is backward and the fetch direction is not opposite the ordering of the index partitions or if the fetch direction is forward and the fetch direction is opposite the ordering of the index partitions; and setting the fetch direction to forward if the fetch direction is backward and the fetch direction is opposite the ordering of the index partitions or if the fetch direction is forward and the fetch direction is not opposite the ordering of the index partitions. The Examiner cited the above discussed para. 90 of Bonner as teaching the additional requirements of these claims. (OA5, pg. 5) Applicants traverse for the following reasons. As discussed, the cited para. 90 discusses how to handle a fetch sensitive where flags indicate that the accessed row in the result table has been deleted in the base table. The Examiner has not shown where the cited para. 90 teaches or suggests setting the fetch direction in which the index is scanned based on the partition index ordering and the direction indicated in the fetch request. Instead, the cited para. 90 discusses how to perform a fetch sensitive when.

**Examiner responds:**

Examiner is not persuaded. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. Interpretation of Claims- Broadest Reasonable Interpretation: During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969). In this case examiner has also cited paragraph 0089 "that the fetch direction is set opposite the direction indicated in the fetch request if the direction indicated in the fetch request is opposite the ordering of the index partitions." Is discloses by the relative or backward functionality of the Bonner system (the cursor must be repositions).

### **Conclusion**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON HARPER whose telephone number is (571)272-0759. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*LJH*  
*Leon J. Harper*  
*October 21, 2009*

/Isaac M. Woo/  
Examiner, Art Unit 2166